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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,659	06/06/2001	Tatsuo Haratani	P/1071-1397	8700

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EXAMINER	
TUGBANG, ANTHONY D	
ART UNIT	**PAPER NUMBER**
3729	10

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/875,659	HARATANI ET AL.	
	Examiner	Art Unit	
	A. Dexter Tugbang	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/361,763.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. The applicants' amendment filed 8/18/03 (Paper No. 8) has been fully considered and made of record.

Response to Arguments

2. Applicants' arguments (see pages 4-5 of the amendment, filed 8/18/03, Paper No. 9) with respect to merits of Ueno'859, have been fully considered and are persuasive. The previous 35 U.S.C. 102(b) rejection of Ueno'859 has been withdrawn.

Specification

3. The abstract of the disclosure is objected to because the abstract is not directed the claimed invention, i.e. method. Correction is required. See MPEP § 608.01(b).

4. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;

(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, the phrases of " the laminated product" (line 6), "the contraction ratio of the ceramic material" (lines 6-7) and "the contraction ratio of the conductive paste" (lines 7-8), each lack positive antecedent basis.

In Claim 2, the term of "wedge-like" (line 2) appears to be an equivalent, or alternative phrase to "wedge or the like". Therefore, the phrase "wedge-like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). Furthermore, the phrases of "the length L of the wedge" (lines 2-3) and "the thickness t of the internal electrode" (line 3), each lack positive antecedent basis.

In Claim 3, the phrase of "the range" (line 2) lacks positive antecedent basis.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication JP 7-142904, referred to hereinafter as JP'904, in view of the publication to Makihara et al, entitled "Multifunctional Ceramic Substrates and Packages for Telecommunication Applications", ISHM'94 Proceedings.

JP'904 discloses a method for producing an electronic part comprising: laminating a plurality of dielectric green sheets with conductive paste forming internal electrodes (shown in either Figures 1, 4 or 6); and baking the laminated green sheets such that a contraction or shrinkage ratio of the dielectric material of the green sheets is greater then a contraction or shrinkage ratio of the conductive paste (see Claim 34, paragraph 0013).

Regarding Claim 6, being that the paste forming the internal electrodes is conductive, the paste would include a high melting point metal.

JP'904 does not appear to mention that the dielectric material of the green sheets is ceramic, such that the sheets can be called "ceramic green sheets".

Makihara teaches that dielectric sheets can be made of a ceramic composition in laminated electronic parts to achieve dielectric constants in the green sheets based on the frequency application of the electronic part (see page 244).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the dielectric green sheets of JP'904 by including the composition of ceramic materials, as taught by Makihara et al, to positively provide ceramic green sheets based on the frequency application of the electronic part.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'904 in view of Makihara et al, as applied to claims 1 and 6 above, and further in view of the publication to Kato et al, entitled "Application of Low Temperature Fired Multilayered Substrates to High Frequency, ISHM'92 Proceedings.

JP'904, as modified Makihara et al, teaches the claimed manufacturing method as relied upon above. The modified JP'904 method does not appear to mention that the internal electrodes have a wedge-like cross-sectional shape with the length L of the wedge and the thickness t of the internal electrodes at the base of the wedge, satisfying the relationship of $L > 2t$.

Kato et al shows wedge-like cross-sectional shaped internal electrodes (in Fig. 1) with the length L of the internal electrodes (into and out of the page) being greater than the thickness 2t. The benefits of the shape of the internal electrodes of Kato provide high reliability (see bottom of page 263).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the shape of the internal electrodes of JP'904 by forming the internal electrodes into a wedge-like cross-sectional shape, as taught by Kato et al, to positively produce a conductive pattern in laminated green sheets with high reliability.

10. Claims 3-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'904 in view of Makihara et al, as applied to claims 1 and 6 above, and further in view of Ueno et al 5,166,859.

JP'904, as modified by Makihara, teaches the claimed manufacturing method as relied upon above.

Regarding Claims 4 and 7, the modified JP'904 method does not appear to mention the use of binder with metal powders and that the high metal melting point metal is Ni.

Ueno teaches the use of a binder, which is scattered or removed after baking (see col. 14, lines 5-23), and a high melting point metal of Ni utilized in the conductive paste. The benefits of the above use of the binder and composition of Ni positively achieve a certain grain structure that prevents damage from abnormal voltages during operation of the electronic part (see col. 1, lines 10-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method JP'904 by including a binder and Ni composition in the conductive paste, as taught by Ueno, to advantageously achieve a certain grain structure that prevents damage from abnormal voltages during operation of the electronic part.

Regarding Claims 3 and 5, the claimed range of thickness for the internal electrodes and the weight percentages of the materials of the conductive paste relative to the binder and metal powders, are each considered to be necessary effective variables within the level of ordinary skill in the art of manufacturing electronic parts with laminated green sheets and conductive pastes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the internal electrodes of either JP'904, Makihara et al, or Kato et al with a

thickness range of 3-20 μm and a conductive paste having 2-5% by weight of the binder with respect to 100% by weight of the metal powders, since it has been held that discovering optimum values of result effective variables involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599. The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9302.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.

A. Dexter Tugbang
Primary Examiner
Art Unit 3729

November 7, 2003